



EDUCATION

Can be an

ADVENTURE

*Some suggestions to men
and women, both youn-
ger and older, who are
high school graduates- re-
lating to the creative use
of their evening hours.*

What is Education?

Education in its truest and finest sense may be an adventure in creative living. At its highest level, education is not the mere impartation or reception of information or skills. It is the process by which persons *grow*, by which they are enabled to *live significantly*.

Some things which *good* education enables people to do are: explore those things which they find of interest, remain permeated with the play spirit during their work, respect persons holding diverse opinions, treat institutions and groups not as ends in themselves—but as means to human values, look upon differences between people as precious, consciously apply suitable standards of judgment to all their experiences, keep active a desire for continued growth, increase their capacity for further education, develop the capacity for self-direction, utilize all available resources for continued growth, help save for the group the best in the social heritage, introduce social changes without introducing disorder, freely change their ways in response to evaluation or criticism, relax the grip of authority of customs and traditions, integrate thinking and knowledge with activity, bind individuals together in cooperative human pursuits, encourage the sharing of interests among all persons affected, break existing barriers between groups and foster harmonious relationships, bring into the open their real thoughts, master needed knowledges and skills—but subordinate these to social ends, effect changes in existing conditions, integrate knowledge with morals.

Education is a way of life. It is an interesting way, an adventurous way; it is a way which frees from enslaving tradition, tabu, narrow utilitarianism, conventionalism and passion. It is a way, however, which each person must discover for himself; one cannot pursue education vicariously. Education is the continuous reconstruction of experience, both individual and social. It is the *experiencing* which is educative.

Two Major Misconceptions

The foregoing description of some of the qualities of the educational process immediately brings to a focus several fallacies in the conception of education which is held by many people. Of these two will be mentioned.

The first, and most common, misconception is that education is a process which terminates at specified points—graduation from high school, from college, from the professional school—after which the man or woman enters a vocation, which becomes the chief concern of life. The major interest, from this so-called terminal point, is in “getting on” in the world rather than in understanding and re-making it. The truth is that education is not a terminable process but is a process which is contemporaneous with life itself. Education begins at the moment of birth and ends only with death. The problem for men and women is that of giving their education proper direction. Some adequate directions have been suggested on the previous page.

A second, and almost equally common, misconception, is that education consists of the accumulation of specific bits of information or the development of proficiency in narrow specialized skills. True, information and skills are part of the equipment of an educated person, but they are means, not ends. The profoundest knowledge of subject-matter—in science, language or any other field—does not *per se* make an educated man or woman. Subject-matter is what one needs to know in order to do what one is interested in doing. Subject-matter becomes educational to the person when, if, and as he uses it in a purposeful activity. Some directions in which purposeful activity may be found have been indicated under the heading *What is Education?*

Pathways to Knowledge

It has been suggested that subject-matter, or *knowledge*,—ideas, information, skills—becomes educational *if* it is used and *as* it is used in a purposeful activity. An activity with purpose is deliberate; activity which is deliberate involves a consciously foreseen end, and a mental weighing of the case for and against; it involves conscious desire for the end. Knowledge is a perception of those aspects of an object which determine its applicability in a given situation. The function of knowledge is to make one experience freely available in other experiences.

The *experimental method* has re-made our theory of knowledge. It is the method of obtaining knowledge, i.e., *discovery*. It is the method of evaluating what we know, i.e., *proof*. The experimental method is a systematized means of making knowledge. The significance of the experimental method is generally regarded as belonging to technical, physical fields. However, it applies equally well to other fields, including the social and moral. Many people still want the crutch of dogma and authority to support them in their beliefs—so avoiding the effort of thinking and the responsibility of acting as they think. They prefer to be halting followers rather than insatiable inquirers.

With this view of the nature of knowledge, its discovery and use, it is now possible to suggest a few of the highways and byways where knowledge may be found. There are many pathways, and perplexities not a few. The problem for a young man or woman of inquiring mind is that of selection. Not all knowledge is equally valuable in forming the disposition of and supplying the equipment of the members of our present society.

In selecting a field of knowledge for exploration one should use criteria of social worth (a number of such criteria are given in the statement on page 2; the reader can devise others). Essentials come first, refinements second. Essentials are those things which have to do with the experiences in which the widest groups of people share. The refinements are the things which deal with the needs of specialized groups and technical pursuits.

Beyond this rough classification of knowledge into essentials and refinements one cannot go. It is not possible to say, in general, that one study is more valuable than another. A study of great worth in one specific situation may be one of least worth in another, like the choice between food and poetry. Furthermore, each study, in one of its aspects, has an *intrinsic* value, which is unique, irreplaceable, marking a characteristic enrichment of life.

Again, different studies do not have distinct sorts of *instrumental* values. To realize the instrumental value of a study, one must be placed in a specific situation requiring its use. To illustrate by the study of science: Among the possible instrumental values it may have are military, as an instrument of strengthening the means of offence and defence; technological, as an instrument of engineering; commercial, as an aid in the conduct of business or industry; philanthropic, rendering service in the relief of human suffering; conventional, helping to establish one's social status as an 'educated' person. It would be arbitrary to select one of these values as the 'real' aim of science.

The following pages suggest some areas of knowledge which offer opportunity for fruitful and significant experiences on the part of those who possess open minds and a zest for discovery. These fields of study, and others, make possible continued and adventurous education.

Chemistry

A few illustrations, by no means exhaustive, will indicate the extent of the contribution of chemistry to human welfare:

Power: Through the development of the 'cracking' process in the petroleum industry, "anti-knock" gasoline, distillation of shale oil, methods of producing petroleum from bituminous coal, conversion of coke into synthetic motor fuel, and many other discoveries, chemistry has contributed much and will contribute more to the provision of adequate power—which is the basis of all industry. To *Agriculture* chemistry has contributed a now widely used method of extracting and fixing atmospheric nitrogen, a chief constituent of artificial fertilizers; the Babcock method for determining the butter-fat content of milk; many insecticides and fungicides; methods of increasing the productivity of soils, and the acceleration of ripening of crops. In *Medicine* the name of Pasteur is universally recognized, and there is little need of mentioning the vast army of successors to him who through chemistry are working co-operatively with other scientists to combat human disease.

The story of *synthetic chemistry* is one of the romances of the modern age. Synthetic camphor has recently broken the Japanese monopoly; synthetic plasmochin threatens the Dutch East Indies monopoly of quinine; synthetic nitrogen has smashed the Chilean nitrate monopoly; there is a possibility of synthetic milk of uniform composition and superior nutritive qualities; synthetic leather is very widely used; synthetic lacquers are revolutionizing the paint industry; synthetic alcohols, rubber, plastics and many other products are being produced from petroleum; synthetic antiseptics and drugs have made tremendous progress in medicine possible during the past fifty years; one of the most spectacular achievements of synthetic chemistry has been the development of Rayon, or artificial silk, and its close relative, cellophane. There are also countless synthetic perfumes and flavours.

Physics

During the past few years discoveries in the realm of physics have turned previous ideas of the nature of the physical world upside down. Even modern physicists, who have been dead but a few years as time goes—Lavoisier, Faraday, Maxwell, Kelvin—would find these discoveries to be almost incredible. Even thirty years ago the leaders in the field believed physics to be a static science. They thought that all the fundamental principles had been discovered.

Then came the revolution. The first X-ray photographs were published. Radio began to unfold a new field for physical research. The Curies discovered radium and the phenomenon of radio-activity, which has led to entirely new concepts of the structure of matter and the sources of radiant energy. Planck's quantum hypothesis has compromised the "impregnable" position of the wave theory of light. Michelson and Morley first cast doubts upon the existence of ether and indicated the impossibility of absolute motion. Lord Rutherford and his associates have made true the alchemist's dream, by battering the atoms of certain elements to pieces—thereby producing lighter elements from heavier ones. Einstein's theory of relativity, if valid, proves our universe to be finite, not infinite. According to Millikan, too, the cosmic rays indicate that elements in the utmost profusion are continually being born in inter-stellar space. The radiant energy of the stars is being converted into the primordial stuff from which nebulae, suns and solar systems arise.

There is much more. We do well to reflect, as Sir James Jeans tells us, "that mankind is at the very beginning of its existence; on the astronomical time-scale it has lived only a few brief minutes. It is hardly likely to interpret its surroundings aright in the first few moments its eyes are open."

Biology

The biological sciences include those branches of knowledge which have to do with living things, in contrast to the physical sciences, which deal with inanimate objects. Biology has been called the *Science of Life*. Everything pertaining to the form, structure, function and behaviour of living organisms belongs in the realm of biology.

One of the most engaging speculations in biology is the problem of the origin or beginning of life upon the earth. Another related and equally interesting problem is that of organic evolution. By this is meant the development of the myriads of animals and plants which are now found in the world, from the simpler early forms of life. Through study of the phenomenon of inheritance, biological science seeks the solution to these and many related problems.

Biology also leads to a wider understanding of the everyday problems of how we live—the essentials of health, questions of behaviour, the mechanism of the body. The science of biology attacks the practical problems of scientific agriculture, horticulture, forestry, animal husbandry, fisheries, the control of insect life and the production of improved varieties of plants and animals. Modern medicine is based upon knowledge from the field of biology.

To facilitate its study, biology is subdivided into a number of branches. The two main divisions are *zoology*, the science of animal life; and *botany*, the science of plant life. The introduction to biology is usually made through one or both of these divisions. A third branch is *bacteriology*, dealing with a group of living organisms which are neither typically plant nor animal in nature.

Psychology

Psychology is known as the *science of behaviour*. Formerly it was known as the science of *human* behaviour, but its field has been extended to include animals.

Dr. Knight Dunlap, an eminent psychologist, defines the field of psychology as follows: "Psychology deals with perceiving, thinking, and feeling, and the acts which go with them or result from them or from parts of them. These are the great life processes, the 'mental processes' with which we are concerned. Psychology sets out first to discover the laws of their occurrence: under what circumstances this sort of perception occurs; under what circumstances that thought, that feeling, and how this or that type of action is built up. Finally, it seeks to find the way of improving the mental processes: how to make perception and thought more accurate; how to control feeling to the best advantage of the human being; and, more complexly, how to adjust the life processes of man to his environment and the environment to the life processes, in order that human life shall be more orderly, rich, and progressive."

There are a number of divisions within the field of psychology: *normal psychology* is the study of mental processes which occur so generally that they are called normal and practically satisfactory; *abnormal psychology* includes the unusual mental processes. While the insane fall in this group, so also do a very large number of people who are perfectly sane but who are emotionally unbalanced and are failing to make a proper adjustment to life in any of its aspects. There are *adult psychology*, *psychology of infancy*, *child psychology*, *psychology of adolescence*, *individual psychology*, *social psychology*. There are a number of branches of *applied psychology*, including *educational psychology*, *business psychology*, *psychology of religion*.

History

History is possibly the broadest field of knowledge of human interest. Its aim is to give an account of all that has been thought and done in the world. History has assumed, in modern times, a scientific approach and attempts to explain causes and effects—why man has thought and behaved as he has, and how our present society has arrived where it has. Gibbon, one of the great historians, a century and a half ago, declared it to be the duty of history to set forth "the truth, naked unblushing truth." This ideal remains fundamental with the modern scientific historian.

In the past history tended to be a rather narrow study. It dealt primarily with parliaments and kings, the church and the clergy, armies and wars. It had much to say of rulers and princes, but little of the lives of the common people. The modern viewpoint of history is greatly broadened. It is interested in what has been thought and done in art, religion, philosophy, and the world of nature; in the masses as well as the classes. It provides much of the material needed by the economists, sociologists, and psychologists, and also uses the findings of other social scientists in its work of interpreting the past.

History provides a framework into which may be fitted the material of almost any other field of knowledge. It gives one a realization of the evolutionary process, as it applies to society. It makes possible the understanding of the present and provides guidance for the future. The study of history fosters the love of truth, seeing questions from several points of view, with a consequent sympathetic understanding of other creeds, races, nations and forms of government.

Philosophy

Philosophy began when men began to *think about things*. It began when people became curious, when they doubted and questioned, challenged, speculated. It began when men no longer trusted, if they could help it, their sense experiences and emotions but, rather, began to depend upon thought.

Philosophy is opposed to dogmatism, to closed-mindedness, to inability to see the other side. In many respects philosophy is a method, an attitude of mind, a dynamic process, rather than a static or fixed set of ideas.

There can be a philosophy, or several philosophies, of almost anything so long as an open-minded and critical attitude is maintained. There are philosophies of politics, of law, of science, of religion, of education, of art, and of conduct.

Philosophy began with the Greeks in the sixth and seventh centuries B.C. This was when the Greeks began to "think about things." They had no physics, chemistry, or biology, little astronomy, some mathematics, but they did have religion, art, and politics. Some of the chief problems about which they thought were: (1) What is the fundamental stuff or substance out of which everything else is made? (2) What is the meaning or significance of what is now accepted by most philosophers as a fact, namely, that the universe is one of law and order; that it is a cosmos, not a chaos? (3) In what sense and to what extent is there *purpose* in the universe? (4) Is there a God, and, if there is, what is his nature? (5) The Problem of Values: Goodness, Evil, Beauty, Ugliness. (6) The Problem of Knowledge: the character of Knowing, Fact, and Truth. From these beginnings Philosophy has evolved.

Economics

Economics has been defined by Dr. Rexford Guy Tugwell as "the discovery and orderly stating of particular problems and the suggestion of solutions—the problems being roughly, but not closely, defined as those having to do with our ways of getting and using a living."

Never has there been a time more pregnant with opportunity for creative economic thinking than the present. The above-mentioned writer makes the following statements: "Poverty—even accompanied by down-right hunger—still torments vast numbers of people in the world. Nothing has been done toward softening the tragic paradox which Karl Marx, Henry George, and many lesser social critics have written about so bitterly; progress and poverty still are intimate corollaries. For there is the spectacle of factories idle and food going to waste on farms, while food, shelter and clothing, in adequate amounts, are lacking to many millions. And no one seems to know how to disembarass the farmer of his surplus or how to start idle mills."

"The penalties of orthodoxy are upon us now. The disparity between our social and mechanical institutions seems suddenly to be coming home to many minds. The economists are no longer so intrigued by their assumptions, having been made humble by facts; the mood of the world has changed and, especially among business men, faint glimmers of uncertainty begin to appear. Not infrequently we are all of us made to inquire whether what we are doing strictly for ourselves is, after all, and in the long run, good even for ourselves. It is this perception which is most salutary and which may presently give the newer economics a chance."

Sociology

Sociology is the study of *society in the modern world*, a study of contemporary civilization. It is concerned with such problems as: immigration, citizenship, community organization, war and peace, recreation, maladjustment and social attitudes, public opinion, social institutions, the family, population and food supply, social attitudes, birth rates, status of women, environment as a social factor, human ecology, eugenics, races and nationalities, industrial relations, child welfare, standards of living, poverty, dependency, religion and religions, crime and penology, youth and society, intolerance, leadership, civilization.

Professor Giddings, a well-known writer in the field of sociology, was once asked the question: Why study sociology? "We should study sociology," he replied, "because it shows us how inexhaustibly interesting, as well as how complicated and often difficult, is the game of chess that we call life, and the importance of moves that are not obvious to untrained players." And again "sociology is frankly a *liberal* study, an indispensable part of so-called *liberal education*." The objective of a vocational education being to learn how to *do* specific tasks, it differs from liberal education which is to learn how to *think*. "In learning how to think in a scientific spirit, soberly and dispassionately—about great human interests, and preparing ourselves to take part intelligently and responsibly in community life and in large public affairs."

At no time more than the present has there been such urgent need of intelligence in social affairs. The study of sociology will enable one to participate in an intelligent way in the reconstruction of contemporary society.

Literature

Literature is the most intellectual of the fine arts. Yet many people are unable to appreciate and enjoy literature in its intellectual aspects. Many derive from a novel, a drama, or a poem, a certain direct sensory or emotional satisfaction, but little else. Recalling early school experiences with Shakespeare, or Milton's *L'Allegro*, men and women are heard to say: "I cannot enjoy literature if I attempt to make an analysis of it, take the time and trouble to discover the precise meaning of words, or study the writer's style or his methods of portraying character."

The reply to such comments is that pleasure at the sensory or emotional level may be supplemented and enhanced by intelligent understanding of the sources of such pleasure, and discrimination of its peculiar quality. This is education of the senses, and leads to further education. In literature, as in all art, there is communication from the artist to the audience of something which has been experienced or imagined; and this communication is intellectual, from mind to mind.

The study of literature, as distinct from mere reading, may be approached from three points of view: *First*, a consideration of the artist as a person—his native endowment and experience, his views of the world in which he lived, his relations with people, his thoughts about them and about himself. His writings were the result of these things. *Second*, a consideration of the manner of people these others were—their way of life, their interests and ideals. *Third*, a consideration of the art, or technique, of the artist. This is a matter principally of the language and secondarily of the forms in which he uses it, in poetry or prose. The artist's technique is an aspect of his own experience and is also influenced by the social conditions of his time. The study of these three aspects should proceed simultaneously.

Modern Languages

The Germans group under the term *Kultursprachen* ("Languages of Civilization"), English, French and German, the mother countries of which they consider have contributed most to the culture of our present western civilization. These countries have created our aesthetic values, manners and morals, and much of our historical, technical, and scientific material and works of fine literature. Other languages, of course, could be added to this group.

The power to read, if not to speak, any one of these languages easily brings one close to the life of a people who are similar to ourselves in many respects, but different in others. One of the great unifying forces of humankind is the realization—achieved through native speech and literature—that the folk of other nations are meeting with the same problems, economic, religious, political, social, scientific, and aesthetic, as we ourselves. They may be approaching their problems with different methods and different aims, but we may learn much from their experiences—both successful and unsuccessful.

Careful experiment has shown that the man or woman of twenty-five to thirty-five can learn a new language more rapidly and more thoroughly than can a child of ten to fifteen. The difficulties of learning a new language have been greatly exaggerated. Those for whom English is the mother tongue have a great advantage in learning either French, German or Spanish, for the development of English is closely related to these three.

The Fine Arts

There are numerous forms of expression in art. *Architecture* is both an art and a science. Within its scope must be included the Parthenon and the peasant's home, the cathedral and the factory, if they are all expressions of the highest will and desire of their builders. *Sculpture* is a plastic art. In sculpture men have shaped clay, wood, stone, bronze, bone, ivory, and recently soap, in forms that have satisfied them. The bone carvings of Crômagnon man, the wooden figures of the African, the totems of the North American Indian, the clay figurines of China and the Hellenistic age, as well as the figures of Athenian youths and maidens, the carvings of Gothic cathedrals, and the decoration of modern skyscrapers—all are sculpture. Other forms of sculpture are medals, cut gems, and coins, as is also furniture—a Greek chair, a Renaissance pulpit, a Louis XVth mantelpiece.

Pottery, enamelwork, and mosaics fall in the group of graphic arts, as do modern colour-printing, wood-block engraving and etching. *Photography*, also, has great possibilities for artistic expression. *Drawing* goes back to remote scratchings on bone, stone and clay, since which time it has been enriched by additional media such as brush-work, crayon, charcoal, pen and pencil.

Painting has had its development through the *vase painting, wall frescoes, and tempera panels* of Egypt, Greece, Rome, the Middle Ages, and the Renaissance, the *glazed and painted tiles* of Mesopotamia, and the *book illumination* of the middle ages, through the development of *water-colour painting* in the XVIIIth century, right down to the attempt at the formation of a distinctive *Canadian school* of painting by the *Group of Seven*.

An Evening College of Arts, Science, and Commerce

In its Evening College of Arts, Science, and Commerce the Sir George Williams College provides a programme of adult education for those who, during the day, are engaged in making a living.

The courses of study, listed on the following page, the science laboratories and other special equipment, have been provided particularly for those who wish to study during the evening hours. The members of the professorial staff are selected upon the basis of their sympathetic understanding of the special problems of part-time education, as well as for their special knowledge and abilities.

The standard of achievement demanded in the courses is strictly that of the day college or university. The courses are regular *college courses* given during the evening hours.

Any mature person, younger or older, may obtain admission to the College providing he or she can show evidence of sufficient background to give reasonable assurance of successful participation in the particular course of study in which he or she is interested. For those who wish to obtain the *Diploma of Associate* in Arts, or Science, or Commerce, high school graduation or its equivalent is required. In unusual circumstances, an exception may be made to this last regulation—providing the student can pass a special examination of ability and present evidence of proper background.

Special programmes are available for those who wish to prepare for the *Senior Matriculation* examination of McGill or other Universities. By completing such a programme a student may enter the *second* year of the day university.

Courses of Study

Offered in the Evening College of Arts Science, and Commerce

Each course, except a laboratory course, is held one evening each week for a period of two hours. It is possible to follow two courses on the same evening. Laboratory courses, marked *, are held on two evenings each week, two hours each evening.

General Science: The Nature of the World; The Nature of Man.

Biology: General Biology*; Animal Biology*; Vertebrate Zoology*; Plant Biology*; Genetics and Evolution. *Chemistry:* General Chemistry*; Qualitative Analysis*; Quantitative Analysis*; Organic Chemistry*; Industrial Chemistry. *Physics:*

Mechanics, Electricity and Magnetism*; Sound, Heat and Light*; Electricity*. *Mathematics:* Senior Matriculation

Mathematics; Introduction to Statistics. *English Language:*

Senior Matriculation English; Survey of English Literature; Contemporary English Novel; Business English and Reports; Public Speaking. *Modern Languages:* French Language and

Literature; German Language and Literature; Spanish Language and Literature. *Latin:* Senior Matriculation Latin. *History:*

History of Civilization; European History. *Philosophy:* Introduction to Philosophy. *Psychology:* Elementary Psychology;

Social Psychology; Applied Psychology. *Sociology:* Introduction to Sociology; The Family. *Education:* Introduction to Educa-

tion; Principles of Religious Education; Curriculum and Practice in Religious Education. *Fine and Applied Art:* Drawing; Water-

Colour and Oil painting; Etching and Wood-Cutting; Modelling and Sculpture; Commercial Art. *Economics and Commerce:*

Principles of Economics; Contemporary Economic Problems; Economic History; Economic Geography; Principles of Business; Financial Organization; Investments; Advertising; Accountancy.

An outline of the field covered in each of the above courses is given in the current catalogue of the College. A special catalogue is issued describing the work offered in Fine and Applied Art. Either catalogue will be supplied upon request by the Registrar.

Diploma of 'Associate'

For those who can give two or three evenings per week to study, and who are willing to spend a period of three years in pursuing a systematic and well-balanced programme of studies, the Evening College of Arts, Science, and Commerce offers a diploma course leading to the College Diploma of *Associate in Arts, or Science, or Commerce*—depending upon the field in which the student does the major part of his or her study.

This three-year course is the equivalent, in classroom hours and courses, to two years of day university work. Following the practice of Harvard University and many other institutions, the successful completion of this part of the course is recognized by the award of the diploma and title of 'Associate'.

Details of the required and optional courses in these diploma programmes are given in the general catalogue.

Students who wish to complete one year of university work, in the evenings, so shortening their day course by one year, are prepared for the Senior Matriculation Examination of McGill University—in Arts, Science, Commerce, or Engineering. Successful students are awarded the *Senior Matriculation Certificate*, which qualifies them for admission to the second year of most colleges and universities.

Students who complete successfully any single course in the College of Arts, Science and Commerce are awarded a *Course Certificate* for that particular course.

For further information communicate with or interview

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Dean Registrar

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